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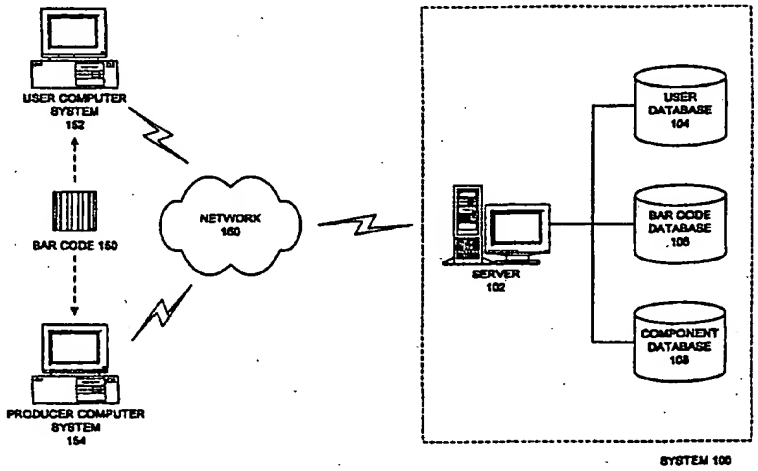

(57) Abstract

A system and method are provided for receiving a bar code from a user, retrieving information concerning an item identified by the bar code, and providing the information to the user. The information may include a hyperlink, a description, summary or review of the item, network address, etc. Producers, vendors, manufacturers and other entities may register bar codes and information about items, including electronic commerce opportunities. A graphical display returned to a user may thus include various product details, advertisements, purchasing opportunities and other data. The graphical display may be tailored to a particular entity, such as the operator of the system or an organization that provided the user with a bar code scanner. The system includes one or more databases to store registered bar codes, information relating to items and components of graphical displays. One or more servers are also included, to maintain the databases and communicate with users and other entities.

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SYSTEM AND METHOD FOR PROVIDING ELECTRONIC INFORMATION UPON RECEIPT OF A SCANNED BAR CODE

BACKGROUND

This invention relates to the fields of computer systems and electronic commerce. More particularly, a system and methods are provided for receiving a representation of a bar code scanned by a user and generating for the user information relating to an item associated with the bar code, possibly including an electronic commerce opportunity.

Bar codes have long been used to identify items such as consumer goods and/or a manufacturer or producer of such items. Bar codes come in many types or formats. They range from one-dimensional codes (in which the graphical pattern of a bar code contains meaningful data when scanned in one dimension) such as the ubiquitous UPC (Universal Product Code), the POSTNET scheme used by the U.S. Postal Service, Code 3 of 9, etc., to two- and even three-dimensional codes. Three-dimensional codes may also be known as radio frequency codes.

The information represented by a one-dimensional bar code may be as simple as a string of numbers and/or letters and other characters that identify an item and/or a source of an item. Two and three-dimensional bar codes may contain a wealth of other data concerning a bar coded item. For example, a two-dimensional bar code format known as PDF417 can store over one kilobyte of information in a single symbol. As its name implies, a two-dimensional bar code contains meaningful data when scanned in two dimensions.

Bar code readers, or scanners, come in a variety of shapes and forms. Bar code scanners may be portable or fixed in place. They may be a component of a larger device (e.g., a computer or digital assistant) or self-contained (e.g., a wand that can read a bar code and store it internally or transmit it to another device).

The usefulness of bar codes has generally been limited to internal operations of business entities. Bar codes have been used, for example, to facilitate the tracking of inventory, to identify a product for re-stocking, to look up the price of an item when a consumer purchases it, to monitor the status of a shipment or delivery (e.g., by tracking its

location) etc. In other words, bar codes have not generally been of use to consumers except to facilitate the purchase or delivery of an item bearing a bar code.

Although a bar code may uniquely identify an item (or set of items) that are of interest to a person, he or she generally has no way to access information concerning the item from the bar code itself. The person may be limited to traditional information sources, such as a salesman, the item's packaging, etc. The lack of easy access (e.g., automated, electronic) to data concerning a bar-coded item is especially noteworthy concerning the proliferation of information generally available to consumers. In particular, the ever-growing use of computers and other electronic devices and communication routes between such devices (e.g., the Internet) means that an abundance of information is available to consumers, but that bar codes presently do not serve as an entrance point to this wealth of data.

Thus, what is needed is a system and method for enabling a person to access information concerning an item of interest to that user (e.g., a consumer good, an article or document) or an opportunity to purchase such an item by scanning a bar code associated with that item. What is also needed is a method for an entity that deals in items having bar codes (e.g., a manufacturer, vendor) to specify information that may be provided to a person who scans a particular bar code. To meet this need, a system capable of receiving bar codes or bar code representations, storing them and relevant information concerning items corresponding to the bar codes, and displaying such information upon demand is also required.

SUMMARY

A system and methods are provided for receiving a bar code, or bar code representation, from a user, retrieving information concerning an item that corresponds to the bar code, and providing that information to the user. The information provided to the user may be displayed as part of a web page or portal page from which the user may access additional information, electronic commerce opportunities, etc.

In one embodiment of the invention, a system server receives a connection from a computer system operated by a user. The user scans a bar code, which corresponds to some item or thing that is of interest to the user, and the user's computer system transmits a representation of the bar code to the server. Upon receipt of the bar code representation, the server stores the representation in a user database in order to accumulate an historical

profile of the user's activity. The system determines the type of bar code (e.g., UPC, Code 3 of 9) and searches an appropriate database for the bar code. If the bar code is found, information relating to the item is also retrieved (e.g., a URL (Uniform Resource Locator), item description, hyperlink, price, electronic commerce opportunity). The information is transmitted to the user and displayed on his or her output device.

In another embodiment of the invention entities such as manufacturers and vendors connect to the system to register or obtain a bar code, submit information to be associated with a bar code or corresponding item, or provide other content to be displayed for a user. Such content may include components of a portal page to be displayed through the user's web browser, such as advertisements, banners, graphics, animations, etc.

DESCRIPTION OF THE FIGURES

FIG. 1 is a block diagram depicting a system for receiving a representation of a bar code and producing information related to a product, service or other item associated with the bar code in accordance with an embodiment of the present invention.

FIG. 2 is a flow chart demonstrating one method of using the system depicted in FIG. 1 in accordance with an embodiment of the present invention.

FIGs. 3A-3B comprise a flow chart demonstrating one method of registering a bar code or information to be associated with a bar code with the system depicted in FIG. 1.

DETAILED DESCRIPTION

The following description is presented to enable any person skilled in the art to make and use the invention and is provided in the context of particular applications of the invention and their requirements. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art and the general principles defined herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention. Thus, the present invention is not intended to be limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.

In particular, various embodiments of the invention discussed below are implemented using the Internet as a means of communicating among a plurality of computer systems. One skilled in the art will recognize that the present invention is not limited to the use of the Internet as a communication medium and that alternative methods

of the invention may accommodate the use of a private intranet, a Local Area Network (LAN), a Wide Area Network (WAN) or other means of communication. In addition, various combinations of wired, wireless (e.g., radio frequency) and optical communication links may be utilized.

The program environment in which a present embodiment of the invention is executed illustratively incorporates one or more general-purpose computers or special-purpose devices such hand-held computers. Details of such devices (e.g., processor, memory, data storage, input and output devices) are well known and are omitted for the sake of clarity. In particular, a bar code scanner may be used in one or more embodiments of the invention. Suitable scanners may take a variety of forms and be portable or fixed in place. They may also be incorporated into or operate in conjunction with other devices or functions (e.g., hand-held or desktop computer) or may be capable of independent operation.

It should also be understood that the techniques of the present invention might be implemented using a variety of technologies. For example, the methods described herein may be implemented in software running on a computer system, or implemented in hardware utilizing either a combination of microprocessors or other specially designed application specific integrated circuits, programmable logic devices, or various combinations thereof. In particular, methods described herein may be implemented by a series of computer-executable instructions residing on a storage medium such as a carrier wave, disk drive, or computer-readable medium. Exemplary forms of carrier waves may be electrical, electromagnetic or optical signals conveying digital data streams along a local network or a publicly accessible network such as the Internet. In addition, although specific embodiments of the invention may employ object-oriented software programming concepts, the invention is not so limited and is easily adapted to employ other forms of directing the operation of a computer.

In one embodiment of the invention a system and method are provided for receiving a representation of a bar code scanned by a user (e.g., a digital translation or equivalent). Upon receipt of the bar code or bar code representation, the system retrieves one or more pieces of information concerning a product, a document, or other item (e.g., an identification tag, a part or piece of equipment, a coupon, a license, a form, a manual or book, etc.) that corresponds to or is associated with the bar code. For example, when a bar code appearing on a consumer product is scanned and received at the system, a

description of that product or other information such as a hyperlink to an electronic location containing additional details concerning the product may be returned. In particular, an electronic commerce opportunity might be offered. Illustratively, the system may report a price of the product, a link to a location at which it may be purchased, information concerning competing or alternative products, etc. Thus, simply by scanning a bar code associated with an item a user is interested in, he or she is provided with a variety of data concerning the item. Scanned bar codes, or bar code representations, may be stored prior to transmission to the system in a bar code scanner or a user's computer that is capable of communication with a scanner. The bar codes or representations may be collected during the execution of a set of instructions (e.g., a software or firmware program) operating on the user's computer (e.g., a web browser, utility application, operating system function).

In another embodiment of the invention, merchants and/or producers of items that are or will be associated with a bar code register the appropriate bar codes with the system. In this embodiment the merchant/producer may supply certain information or links to be provided to all or a subset of users who scan a particular bar code. For example, a manufacturer of a product may select a new UPC (Universal Product Code) bar code for use with a new product. By registering that UPC code with the system, a user can be directed to a network location associated with the manufacturer and/or the specific product. A network location may, for example, be specified as a network address or URL (Uniform Resource Locator).

Other entities may also identify bar codes that are of interest to them for the purpose of displaying appropriate advertisements or for inviting electronic commerce transactions concerning the products associated with the bar codes or the entities' competing or alternative products. In the example above, a merchant that offers the manufacturer's product for sale may indicate to the system its desire to be identified as a vendor to a user interested in the product. This vendor may therefore request or purchase the right to be identified to a number of users who scan the product's bar code and submit its representation to the system.

In yet another embodiment of the invention, an entity may desire a unique or semi-unique bar code for use with a certain product, document or other item. Thus, the entity may purchase or lease a bar code and register it with a system operating an embodiment of the present invention. Illustratively, the entity connects to the system, identifies its desire

for a unique code and a new code is generated by the system and downloaded to the entity (e.g., as a graphics file). The entity may then use that bar code with the desired item or set of items. And, when a user scans the bar code and submits its representation to the system, information registered with the system by the entity may be provided to the user.

In one embodiment, a system may transmit information relevant to a user's item of interest to the user in a form suitable for display as part of graphical user interface, such as a "portal" page (e.g., a web page containing hyperlinks to other information or web locations). A portal page in this embodiment may comprise a set of graphical, audio and other components that are retrieved and forwarded to the user in response to the user's transmission of bar code representation. The page components may be pre-selected or dynamically selected on the basis of various criteria, such as the identity of the operator of the system or the provider of the user's bar code scanner or an entity associated with a bar code scanned by the user. In particular, the various portal page components and item information that are displayed for a user may depend upon contractual or other arrangements between the operator of the system and various manufacturers, producers, vendors and other entities that wish to have users view their designated component or information.

FIG. 1 depicts an illustrative system and environment in which an embodiment of the invention may be implemented. It will be understood that alternative embodiments may be implemented using systems and computing environments having varying degrees of similarity to FIG. 1. In particular, systems for practicing the present invention may be incorporated in centralized or distributed computing environments using virtually any type or configuration of computing devices. A typical system will, however, comprise one or more computer servers or systems for facilitating the generation of appropriate portal pages, depending on a user's item(s) of interest.

In FIG. 1, system 100 comprises server 102 configured to receive bar code representations from users and return information concerning products, items or entities associated with the bar code(s). Server 102 is also configured to receive representations of bar codes from producers, merchants and other entities wishing to provide information concerning, or be associated with in some other manner with, the products or items that correspond to the bar codes.

The various functions performed by server 102 may, in an alternative embodiment of the invention, be distributed among a plurality of servers. For example, a "web,"

"http" (hypertext transport protocol) or "content" server may be employed to assemble and/or transmit information to be displayed for a user. An administrative server may be employed to handle maintenance of or updates to the databases used in system 100 (e.g., such as when a producer registers a new bar code or product). Also, one or more servers may employed to operate the system's databases. In particular, a separate database server may be implemented for each database.

Three databases are depicted in FIG. 1: user database 104, bar code database 106 and component database 108. Alternative embodiments are not limited in the number of databases or database servers they may use. One alternative embodiment may, for example, aggregate all data into one unified database. The various types of data and information may be stored in separate database tables.

User database 104 in the illustrated embodiment stores personal and/or historical information concerning users of system 100. In particular, user database 104 may store identifying data concerning a user (e.g., name, account name, email, network address), profile data (e.g., age, geographical region of residence or work) and historical data concerning the user's activity or interaction with system 100. In addition, the bar codes scanned by the user and presented to system 100 may be stored in user database 104, perhaps for the purposes of analysis and/or categorization. In particular, based on the bar codes scanned by a user, system 100 may determine the types of products/items the user is interested in and therefore enable the accurate targeting of advertisements, marketing and electronic commerce opportunities to the user.

Bar code database 106 in the illustrated embodiment contains bar codes and/or representations of bar codes. For each bar code registered in the database, one or more pieces of information (e.g., URL of an appropriate network site, item description, electronic commerce opportunity, advertisement, product review) are also stored or identified. The bar codes known to database 106 in this embodiment include both public domain codes (e.g., UPC) and proprietary codes (e.g., those generated by system 100 for requesting entities). Representations of one, two and three-dimensional bar codes may be stored in bar code database 106, in any suitable form.

The amount of information concerning a bar-coded item that is stored in bar code database 106 may depend upon the producer or entity associated with the item, the type or form of bar code, and other factors. A UPC (Universal Product Code) code, for example, includes an identifier of an item's producer. The system may therefore store a link or

reference to a suitable source of information (e.g., the producer's World Wide Web site) for all, or many, UPC symbols. The producer may, however, decide to register additional information concerning one or more items with system 100. Then, when a user submits a representation of a UPC for one of these items, tailored information (e.g., a specific page of the producer's web site) can be identified to the user. Other types of bar codes (e.g., non-public domain codes that are not generated by system 100) may not be recognized by the system, thereby limiting the information that can be provided to an interested user to that which is specifically registered by an interested entity (e.g., producer or vendor of an item having an unrecognized bar code, or a competitor of such a producer or vendor).

As already described, bar code database 106 may store information to be displayed for the user that is related to an item associated with a bar code scanned by a user. Alternatively, bar code database 106 may simply identify such information by its location elsewhere than on system 100. Illustratively, after a user provides one or more bar code representations to system 100, a description of the item (e.g., name of a product, title of a document) is retrieved for display to the user along with the related information. Thus, the user may be presented with various information concerning an item he or she is interested in along with links to additional information concerning the same item or an alternative item (e.g., where to buy, cost).

Component database 108 in FIG. 1 stores components of portal pages, web pages or other graphical displays to be provided to one or more users. The components stored in component database 108 may not be tailored to particular items corresponding to bar codes scanned by a user but may, instead, be tailored to specific entities (e.g., manufacturers, producers, vendors, competitors, information aggregators or providers). In other words, the components identified by content database 108 are not necessarily determined by any of the bar codes scanned by the user.

Components stored in component database 108 may include text, graphics, sounds, animations, designs, hyperlinks, etc. They may be stored as executable files, objects, documents or in any other suitable form. One skilled in the art will appreciate that the types of components (and item information stored in bar code 106) may include virtually anything that can be transmitted from one computer to another for presentation to a user. The components assembled and displayed for a user in a particular portal page may be determined ahead of time with an operator of system 100 or may be selected at about the time that a user connects to the system and submits a bar code representation.

The components drawn from database 108 may be retrieved based on the identity of a particular entity. For example, in one embodiment of the invention system 100 may be operated by a particular organization. That organization may choose to display its own advertisements for every user regardless of the items the user scans. A portal page generated by system 100 in this embodiment may thus be tailored to the operator of the system. In another embodiment of the invention, along with the bar code representation(s) received from a user, system 100 may also receive an identifier of a particular entity - such as the entity that provided the bar code scanner employed by the user or the entity that provided the computer system, communication line or software used to transmit the bar code representation(s), etc. A portal page generated for a user in this embodiment may thus be tailored to the identified entity.

The various portal page components and pieces of information concerning an item having a bar code scanned by a user may be assembled for display to the user according to one or more templates. These components and/or pieces of information may, in turn, include templates for displaying sub-elements of the components or information.

A template may describe a portion of a user interface (e.g., a portal or other web page) to be viewed on the user's display or monitor. For example, one template may comprise a banner section to be populated from component database 108 on the basis of the identity of the entity that provided the user's bar code scanner and/or the operator of system 100. Another section of the template may be configured to include one or more advertisements or links to advertisers - illustratively retrieved from component database 108 and/or bar code database 106. Another, primary, section of the template, however, should consist of information drawn from bar code database 106. As described above, in this section would appear information (e.g., description, title, summary, review, commerce opportunity) relating to the bar codes scanned by the user.

Due to the amount of information to be included in this primary section, it may incorporate a link or extension to another page or template that will display additional information. For example, a first portal page displayed to a user may identify a number of items whose bar codes were scanned by the user and transmitted to system 100. For each item a description (or link(s) to sites containing descriptions) may be provided. In addition, the first portal page may include links to one or more follow-on pages for the purposes of presenting electronic commerce opportunities and/or other information. On these follow-on pages may appear one or more costs of an item from one or more

vendors, costs of competing or alternative items (with or without descriptions and vendors), a tool for tracking a user's purchases or items of interest, etc.

Returning now to FIG. 1, network 150 is a communication medium through which system 100 can communicate with user computer system 152 and/or producer computer system 154. Illustratively, network 150 is the Internet, although other public or private networks, local or wide-area in nature may be substituted. Network 150 may be of any suitable topology and operate virtually any protocol or protocols. In one alternative embodiment of the invention, network 150 is replaced as a communication medium by point-to-point links between system 100 and user computer system 152 and/or between system 100 and producer computer system 154. One skilled in the art will recognize that any effective means of communicating between a computer system and system 100 may be implemented. In particular, system 100 may include any number of computers for communicating with users and other entities and may communicate through a firewall, a proxy server or other means of separating, isolating or securing communications.

User computer system 152 and producer computer system 154 may be hand-held, notebook, laptop, desktop, workstation or other computer systems suitable for operation by one or more individuals. In the illustrated embodiment, a primary distinction between user computer system 152 and producer computer system 154 is the purpose of its connection to system 100. In particular, user computer system 152 is configured and employed to submit one or more bar code representations to system 100 and retrieve related information, as described above. User computer system 152 therefore receives and displays information sent from system 100 for a user operating the computer system. The information may be presented in the form of one or more portal pages or other user interfaces.

User computer system 152 is specifically configured to scan a bar code or receive a bar code representation from a bar code scanner and to transmit a bar code representation to system 100. In one embodiment of the invention the computer system may incorporate a computer program or other series of executable instructions such as an applet or plug-in application suitable for use with a web browser or other user interface. In this embodiment the program facilitates the receipt and storage of bar code (e.g., bar code representations) scanned by a user. The program may be configured to automatically launch a web browser (or other interface) and/or direct a browser to system 100. The program may be downloaded or updated from system 100, may be loaded in conjunction

with the connection of a bar code scanner to the computer system, may reside in hardware (e.g., the bar code scanner) or firmware, etc.

In contrast to user computer system 152, producer computer system 154 is configured and employed to register bar codes (e.g., bar code representations) and/or portal page components with system 100. Thus, a product manufacturer, vendor, advertiser or other entity may register its own bar codes or bar codes generated by system 100 on its behalf. When registering a bar code with system 100, an entity illustratively identifies or supplies information to be displayed for a user who scans the bar code. As described above, this information may include a link to a product description, summary or review, a network location (e.g., web site or page), an advertisement, an electronic commerce opportunity, etc. Thus, bar code database 106 and component database 108 may be populated with information and portal page components submitted through producer computer system 154.

Bar code 160 may be any public domain (e.g., UPC, Code 3 of 9) or proprietary bar code (e.g., generated by system 100). Bar code 160 may or may not have accompanying alphabetic, numeric, alphanumeric or other characters that also represent the bar code. Although bar code 160 in FIG. 1 is a one-dimensional, bi-directional (e.g., can be scanned left-to-right or vice versa) bar code, multi-dimensional codes are also suitable for use with system 100 and may be unidirectional, bi-directional or other.

In a present embodiment of the invention a user may use a bar code scanner to scan bar code 160 (e.g., from a product, a document or other item) or may manually enter its associated character representation. The device used to scan a bar code may take any form or design and may be incorporated into other devices (e.g., hand-held computer, pager, wireless telephone). Some bar code scanners take the form of wands, pens, cards, hand-held devices, etc.

In one embodiment of the invention a bar code scanner is provided to a user and is configured to identify the provider of the bar code scanner when user computer system 152 connects to system 100 and transmits a bar code representation. In addition to sending an identifier of the scanner provider and one or more bar code representations during its communication with system 100, user computer system 152 may also send information identifying a person using user computer system 152 (e.g., name, account name, email address). For purposes of identifying a user and/or collecting historical information concerning the user's interaction with system 100, system 100 may store

certain data (e.g., account name, profile, history of interaction with system 100) on the user's computer system (e.g., as a "cookie" or other collection of data retrievable by system 100). In alternative embodiments of the invention system 100 may also store portal page components and/or item information on user computer system 152. For example, components of the portal page that are tailored to the provider of the user's bar code scanner may be stored in order to increase the speed with which a portal page is displayed on the user's computer system. Components and item information downloaded to user computer system 152 may be updated or replaced during a later connection to system 100.

Although the embodiment of system 100 illustrated in FIG. 1 comprises three databases, in one particular embodiment of the invention five databases are employed. A first database, a client database, is similar to user database 104. A client database may store identification and activity data concerning a user. This data may include representations of bar codes scanned by the user, links or other information associated with the items corresponding to the scanned bar codes, etc.

In this alternative embodiment, a second database may be termed a code database and is similar to bar code database 106 of FIG. 1. Illustratively, the code database associates a bar code representation with an appropriate link (e.g., a hyperlink to an Internet URL) concerning an item that corresponds to the bar code. The link for a particular item may take the user to the web site of a manufacturer or vendor of that item or a particular page within the web site that addresses the item. Item descriptions, reviews, summaries, and other information concerning the item may also be stored in the code database. A primary function of the code database may be to identify a URL that is pertinent to an item whose bar code was scanned by a user.

The third database in this alternative embodiment is a content database similar to component database 108. This content database may store or identify links (e.g., hyperlinks) and/or advertisements for specific advertisers or partners of the entity that operates system 100. The advertisers/partners may register specific links and advertisements to be displayed in portal pages. As described above, a portal page is a page displayed to a user in response to his or her submission of one or more bar code representations to system 100. In this alternative embodiment a portal page is tailored to a particular entity, such as the provider of the user's bar code scanner, the operator of system 100 or an advertiser or partner having an agreement with the operator of system

100. Thus, the content database in this alternative embodiment contains portal page components (e.g., banners, advertisements, hyperlinks, graphics, animations) specific to one or more entities for which a portal page may be tailored. In particular, each entity that provides a bar code scanner to a user may specify components to be stored in the content database for tailoring its portal page. One distinction of portal pages in a current embodiment of the invention is that they are dynamically generated by system 100 and are thus not associated with, and cannot be reached via, a URL.

A fourth database in this alternative embodiment may be termed a commerce database. Illustratively, a commerce database maps a bar code (e.g., a bar code representation) to one or more vendors or other entities that wish to offer a user an electronic commerce opportunity relating to an item corresponding to the bar code. Thus, in this alternative embodiment vendors may register bar codes (e.g., bar code representations) for storage in the commerce opportunity database and, when a user submits a bar code representation for an item, the database is searched for interested vendors. Then, when a portal page is generated and displayed for a user, one or more vendors offering electronic commerce opportunities relating to the item may be identified with the item itself. The electronic commerce opportunities may include a chance to purchase or rent the item or a substitute/alternative. A commerce database may include various information to allow a user to determine whether to avail himself or herself of an opportunity. The database may, for example, include a description of an item or competing/substitute item, comparable prices, etc.

One last database that may be included in this alternative embodiment may be termed a purchase database. Illustratively, a purchase database stores details of purchases made by a user using information (e.g., an electronic commerce opportunity) provided by system 100. The purchase database may store identifiers of all items purchased by a user over a period of time, from a particular vendor, etc. Purchase records may be organized or categorized so that when the user later submits a bar code representation for an item related to a previous purchase to system 100, one or more details of the previous purchase may be presented in association with the item. In addition, when a user links to a particular vendor through system 100, he or she may be presented with a list of other items (or related items) he or she purchased from that vendor and may want to purchase again (e.g., a grocery list).

Thus, a purchase database may allow a portal page to incorporate a tool to identify or organize items a user wishes to purchase or has purchased from one or more vendors. System 100 may collect the information needed to conduct a purchase (e.g., item identifier, quantity, price, method of payment) and submit them to a vendor for a user.

With reference now to FIG. 2, one method of receiving a bar code representation from a user and providing him or her with a portal page including information relevant to an item associated with the bar code is described. Prior to the illustrated method, the user obtains or receives a bar code reader or scanner. As described previously, the bar code scanner may take virtually any form and may communicate with the user's computer system through a wired or unwired (e.g., RF (Radio Frequency)) connection and may form an integral part of the computer (e.g., a hand-held model) or may attach as a peripheral device.

In addition, a program operates on the user's computer system for receiving a scanned bar code from the bar code scanner and for forwarding a digital or other representation of the bar code to system 100. The program may comprise a distinct application or may be linked or embedded in another application (e.g., a web browser, operating system, communications program). In one embodiment of the invention the program may be supplied by the entity that provides the user's bar code scanner. In this embodiment the program may be branded (e.g., customized) to identify the provider (e.g., via a banner, advertisement or other graphic displayed by or as part of the program). The program may also be serialized or incorporate other data to identify the user or the user's computer or scanner. Also in this embodiment, the program may be automatically launched when the user scans a bar code or the user may launch the program prior to scanning a first bar code.

In FIG. 2, state 200 is a start state, which illustratively corresponds to the initiation of execution of the program for receiving bar code representations from a bar code scanner.

In state 202, the user scans a bar code or manually enters the numeric, alphabetic, alphanumeric or other human-readable data that may accompany the bar code. For example, each UPC (Universal Product Code) includes the numeric representation of its bar code, which may be entered manually if the bar code scanner is inoperable or the code itself is illegible or otherwise not scannable.

The bar code scanned by the user in state 202 may be one- or multi-dimensional and may adhere to any public domain or proprietary format. Among the many types of bar codes that may be accepted by system 100 are UPC, Code 3 of 9, POSTNET, Code 128, EAN (European Article Numbering), JAN (Japanese Article Numbering), etc. The amount of information that may be provided to a user for a specific bar code may, however, depend upon whether the type of bar code is in the public domain or is proprietary. In particular, system 100 may be configured to identify a web site or page for each product or item that is associated with a public domain bar code or a bar code generated by system 100. For proprietary codes other than those generated by system 100, however, the amount of information provided by system 100 may depend upon whether the owner of the bar code registered it with the system. Likewise, for each public domain bar code a manufacturer or producer corresponding to a bar code (e.g., the manufacturer corresponding to the 5-digit manufacturer number of a UPC) may supply system 100 with varying levels of information that it desires to be associated with an item or product.

In state 204, a representation of the scanned bar code is received at the user's computer system (from the bar code scanner or, manually, from the user). In one embodiment of the invention the bar code representation is transmitted from the bar code scanner as, or shortly after, the code is scanned. In another embodiment of the invention the bar code scanner may store one or more bar code representations for later transmission to the computer system. The bar code representation may be received at the computer system via electrical, optical, radio frequency or other signals. Along with the bar code representation, when the bar code is scanned using a bar code scanner (e.g., as opposed to when a user manually enters the bar code), the bar code scanner may transmit to the user's computer some data or information (e.g., a serial number) that may be used to identify the provider of the bar code scanner. Alternatively, an identifier of the provider of the bar code scanner may be built-in to the bar code program.

In state 206, the user's computer system connects to system 100. In particular, the computer system may establish a connection, secure or unsecure, to a server configured to establish connections with users. For example, server 102 in FIG. 1 may be configured to establish connections with user computers via the Internet, point-to-point links or other means. In an alternative embodiment of the invention, the user's computer system may be connected to system 100 before the user scans the bar code.

In state 208, system 100 (e.g., server 102) receives a communication from the user's computer. A number of things or pieces of data may be transmitted as part of this communication. In a present embodiment of the invention this communication may comprise an identity of the user (e.g., user or account name, email address, mailing address), an identity of the provider of the bar code scanner that scanned the bar code and a suitable (e.g., digital) representation of the bar code (e.g., the representation received by the user's computer system from the bar code scanner).

In state 210, one or more pieces of data from this communication are saved at system 100, perhaps in a user database. In particular, the bar code representation is stored along with an identifier of the user.

In state 212, system 100 (e.g., a bar code database) is searched for the bar code representation received from the user. If the bar code is found, the information associated with that bar code (e.g., a URL, product description) is then retrieved in state 214. This information will be displayed for the user as part of a portal page dynamically generated by system 100. As discussed in more detail below, the portal page that is displayed for the user may be tailored or customized for the provider of the user's bar code scanner. Illustratively, if the bar code is not found in system 100, default information for the bar code may be retrieved. For example, if the bar code is a UPC symbol, then even though the bar code has not been registered with the system, the system may have suitable information (e.g., a URL) for the manufacturer/provider associated with the code.

In state 216, one or more appropriate components (e.g., advertisements, banners, URLs, graphics, animations) are retrieved for use in generating a portal page for the user. As described in conjunction with FIG. 1, these components may be stored in one or more databases. In one embodiment of the invention each provider of bar code scanners used to read bar codes for submission to system 100 may provide a set of components to system 100. This set of components allows system 100 to construct a portal page appropriate for the scanner provider.

In state 218, system 100 transmits the components of a suitable portal page to the user's computer system, along with any information retrieved that corresponds to the bar code the user scanned. Various formats and protocols exist for transmitting these components from a server to a computer system and one skilled in the art will appreciate that any suitable method of delivery may be applied.

In state 220 the portal page is displayed on the user's computer system (e.g., monitor, LCD or LED display). In this initial page, links may be embedded to direct the user's computer system (e.g., via a web browser) to another network location (e.g., via a URL) or to a follow-on page containing additional information relevant to one or more items associated with the bar code the user scanned. Once the portal page with its various graphics, advertisements, links, and other data is displayed, the user may navigate at will to view information concerning an item, investigate or conduct an electronic commerce opportunity, etc.

In state 222 in this embodiment of the invention, information concerning the user's activity is saved on system 100 and, possibly, his or her computer system. In particular, data concerning the bar codes the user scanned, any items the user was interested in, an electronic transaction the user conducted through system 100, preferences that the user expressed concerning the manner or format in which information is displayed, etc., may be saved. In one embodiment of the invention system 100 accumulates the user's bar code representations over time so that each time he or she connects to system 100 he or she may view all or a subset of the items the user previously expressed an interest in. The user may selectively remove items and bar code representations from those that are to be displayed.

The illustrated embodiment of the invention ends with state 224.

FIG. 3 depicts an illustrative method by which a producer, manufacturer or other entity (e.g., a vendor) interacts with system 100 to perform a variety of actions. For example, the illustrated method may be used to register a bar code with system 100 or to obtain a bar code generated by the system. The illustrated method may also be used to supply system 100 with relevant information concerning an item associated with the bar code (e.g., URL, product description, electronic commerce opportunity, advertisement) or a component to be included in a portal page. The more information submitted to system 100 concerning an item or produce that corresponds to a bar code, the more information that can be provided to a user. In FIG. 3, state 300 is a start state.

In state 302, an entity (e.g., manufacturer, vendor, producer) connects to system 100. During the connection process, the entity is identified to system 100, possibly by an entity or account name. The entity may connect to the system from a computer system such as producer computer system 154 in FIG. 1. The computer system employed by the entity may connect to system 100 via a network such as the Internet, a point-to-point link

or other suitable means. Illustratively, the entity's computer system is equipped to scan and/or print bar codes and to store and transmit whatever information the entity wishes to provide to system 100. Within system 100, entity computer systems connecting for the purpose of registering/obtaining a bar code or to provide relevant information may connect to a different server than the server to which users connect. In particular, an administrative server may handle communications with the entity computer system. The connection between the entity and system 100 may be secure or unsecure.

In state 304, it is determined whether the entity wishes to register a bar code. If so, the illustrated method continues at state 306, otherwise the procedure continues at state 310. For purposes of determining an entity's desired action, system 100 may offer the entity a menu of options (e.g., register a bar code, obtain a bar code, store a portal page component, store an advertisement). A page of a World Wide Web site operated for system 100 may include these options plus others - such as reviewing the information, advertisements, portal page components, or any other material that an entity stored previously.

In state 306 the entity computer system forwards a bar code, or a digital or other representation of a bar code, that the entity wishes to register. The bar code may be of a public domain type (e.g., UPC, Code 3 of 9) or may be proprietary. In particular, after an entity registers or obtains a bar code from system 100 (as described below), the entity may wish to change the bar code's association from one item or set of items to another.

The bar code to be registered may have been stored on the entity computer system (e.g., the computer system may store all of the entity's bar codes) or the bar code may be scanned just prior to forwarding its representation to system 100. Alternatively, the bar code may be provided to system 100 in hard-copy form, in which case it would be scanned by the system.

In state 308 the bar code representation received from the entity is stored in system 100 (e.g., in a bar code database). In one embodiment of the invention bar codes are stored in different databases (possibly with different database servers) or different database tables depending upon the type of bar code. Thus, one database would store UPC bar codes, another database would store Code 3 of 9 codes, another would store bar codes generated by system 100, etc. In an alternative embodiment of the invention, however, two or more types of bar codes are stored in a single database. For example, one database or set of databases may store one-dimensional bar codes, another may store

two-dimensional codes, etc. In yet another embodiment, multiple types of bar codes may be stored in one database, but in separate tables or other database structures.

The entity may register a bar code for a limited or unlimited certain period of time. Illustratively, if only a limited registration is selected for a bar code then system 100 will cease distributing the relevant information for that bar code to users after its registration expires. After state 308, the illustrated procedure continues at state 316.

In state 310, system 100 determines whether the entity wishes to obtain a unique bar code, generated by system 100. If not, the illustrated procedure continues at state 316.

In state 312, system 100 generates a unique bar code (illustratively, using a proprietary design or format) in response to the entity's request and transmits it to the entity. The entity may be queried as to a size (e.g., length, width, height), type (e.g., one-dimensional, two-dimensional, RF (radio frequency)), shape (e.g., rectangular, oval, custom) and other features of the desired bar code. In addition, system 100 may offer a number of formats or types from which the entity may choose. The entity may purchase or lease exclusive or limited use of the bar code (e.g., limited to a certain period of time).

In a present embodiment of the invention, in state 314 the generated bar code is automatically registered for the entity (e.g., stored in an appropriate database). The entity may also identify a set of one or more items or products to be associated with the bar code. The new bar code is provided to the entity in the same form in which it accepts bar codes (e.g., for registration) and/or it may provide a variety of choices (e.g., PDF (Portable Document Format), TIFF (Tagged Image File Format), facsimile). After state 314, the illustrated procedure continues at state 316.

In state 316, the system determines whether the entity wishes to identify any information to be associated with a bar code. As already discussed, such information may include a URL, an advertisement, an electronic commerce opportunity, a product summary, description or review, etc. Note that the entity may be taken to this state immediately after registering or obtaining a new bar code. If the entity is not providing or updating information for a bar code or corresponding item, the illustrated procedure continues at state 320.

In state 318, the entity's information is received at system 100 (e.g., at an administrative or database server). The format in which the information is received may depend upon the type of information and the method of communication between the entity and system 100. In general, however, the information may be received in any suitable

form – electronically or via hard-copy, as a binary or text file, as a graphical image, or in a format such as HTML (Hyper Text Markup Language), XML (Extensible Markup Language), VDML (Visual Data Markup Language) or VRML (Virtual Reality Modeling Language). One skilled in the art will appreciate that a number of different formats for submitting information to system 100 are suitable. The illustrated procedure then continues at state 320.

In state 320, an entity may choose to store or update a component of a portal page. As discussed previously, an initial or portal page displayed for a user in response to receipt of a scanned bar code may be tailored to a particular entity such as the provider of the user's bar code scanner. Entities for which portal pages are tailored may, therefore, submit and update components to system 100 for use in generating a portal page. As one skilled in the art will recognize, a portal or web page may include many types of objects, including textual, graphical, audio, etc. Access to state 320 may thus be restricted to entities meeting specified criteria (e.g., those that have an account with system 100, provide bar code scanners to users, or otherwise arrange with an operator of the system). Various security strategies are contemplated for restricting the actions of entities and/or users when connected to system 100 (e.g., encryption, passwords).

In state 322, system 100 receives a new or updated portal page component from the entity. The component is then stored appropriately (e.g., in a database with other components associated with the entity). A number of alternative components may be stored such that when a portal page is to be generated, a random or fixed algorithm may be followed so that not all of the portal pages for a given bar code scanner are identical. In other words, although all users that received a bar code scanner from a certain provider may receive a portal page tailored to that provider, the portal pages may or may not be identical. Some may have different banners, color schemes, advertisements, etc.

In state 324, the entity may choose to view a bar code, information concerning a bar code (or corresponding item) or a portal page component previously stored on system 100. This option allows the entity to ensure that the correct data is available for display to users. If the entity does not wish to view any data, the illustrated procedure ends at state 328.

In state 326, system 100 provides the entity with whatever type of data it wishes to view (e.g., bar code, URL, advertisement, portal page component). The system may, for

example, generate and transmit to the entity a sample portal page or an actual portal page that had been provided to one or more users.

After state 326, the illustrated procedure ends with state 328. In one alternative embodiment of the invention, the illustrated procedure is recursive, so that an entity may perform several repetitive or non-repetitive actions during a single connection.

In one embodiment of the invention, business entities (e.g., vendors, manufacturers) may have additional options for interacting with system 100. In particular, an entity may receive statistics concerning how many users submitted a particular bar code or bar code representation to the system, how many of a certain bar code scanner provider's portal pages were generated and transmitted to users, the number of users who have connected to the system for any reason, etc. An entity may also have an option of purchasing or licensing additional use of the system (e.g., to have an advertisement provided to another X number of users).

The foregoing descriptions of embodiments of the invention have been presented for purposes of illustration and description only. They are not intended to be exhaustive or to limit the invention to the forms disclosed. Many modifications and variations will be apparent to practitioners skilled in the art. Accordingly, the above disclosure is not intended to limit the invention; the scope of the invention is defined by the appended claims.

What Is Claimed Is:

1. A method of receiving an electronic representation of a bar code from a user and providing said user with information concerning an item that corresponds to the bar code, comprising:

receiving a representation of a first bar code from a computer system operated by a user, wherein said first bar code corresponds to an item that is of interest to the user;

receiving an identifier of an entity that provided a bar code scanner used by the user to scan said first bar code;

receiving an identifier of the user;

searching a set of bar code representations for said representation of said first bar code;

retrieving information concerning said item;

retrieving one or more components of a graphical display to be provided to the user;

transmitting said information and said one or more components to said computer system for display to the user.

2. A method of providing information over a network to a user at a computer system concerning an item of interest to the user, wherein the item is associated with a scannable bar code, the method comprising:

receiving a connection at a network server from a computer system of a first user;

electronically receiving a digital representation of a first bar code from the first user at said network server, said first bar code having been scanned by the first user and said first bar code being associated with a first item of interest to the first user;

determining a type of said first bar code;

searching a database indexed by bar codes of said type for a database entry corresponding to said first bar code;

retrieving information corresponding to said first item from said database; and

providing said information to the first user.

3. The method of claim 2, wherein said information is a Uniform Resource Locator.

4. The method of claim 2, wherein said information includes a link to a network location corresponding to said first item.

5. The method of claim 2, wherein said information includes a link to a network location at which the user may conduct an electronic commerce transaction concerning said first item or a second item related to said first item.

6. The method of claim 2, wherein said first bar code is a public domain bar code.

7. The method of claim 2, further comprising:

receiving a connection from a computer system of a business entity;

receiving a second bar code electronically from the business entity, said second bar code corresponding to a second item associated with said business entity;

receiving information from the business entity corresponding to said second item to be displayed to a user who transmits said second bar code to said network server; and

storing said information from the business entity.

8. A method of providing information from a server to a user at a computer system, wherein the information is relevant to an item of interest to the user, comprising:

receiving a communication at a server from a user, said communication including an electronic translation of a bar code scanned by the user, wherein said bar code is associated with a first item of interest to the user;

determining a type of said bar code;

searching a database indexed by electronic translations of bar codes of said type for an entry corresponding to said bar code;

retrieving information from said database concerning said first item; and

displaying said information for the user.

9. The method of claim 8, wherein said information comprises an electronic commerce opportunity concerning said first item.

17. The apparatus of claim 16, further comprising a second server for updating one of said first, second or third databases.

18. The apparatus of claim 16, further comprising a second server for generating a unique bar code.

19. A computer readable storage medium storing instructions that, when executed by a computer, cause the computer to perform a method for providing information from a network server to a user at a computer system, wherein the information is relevant to an item of interest to the user, the method comprising:

receiving a communication from a user, said communication including an electronic translation of a bar code scanned by the user, wherein said bar code is associated with an item of interest to the user;

determining a type of said bar code;

searching a database indexed by electronic translations of bar codes of said type for an entry corresponding to said bar code;

retrieving information from said database concerning said item; and

displaying said information for the user

20. A computer readable storage medium containing a data structure for facilitating the return of information concerning an item corresponding to a bar code, said data structure comprising:

a representation of a first bar code, wherein said first bar code is formatted according to a first bar code type;

a representation of a second bar code, wherein said second bar code is formatted according to a second bar code type; and

an identifier of an electronically accessible location for obtaining information concerning an item associated with one of said first bar code and said second bar code.

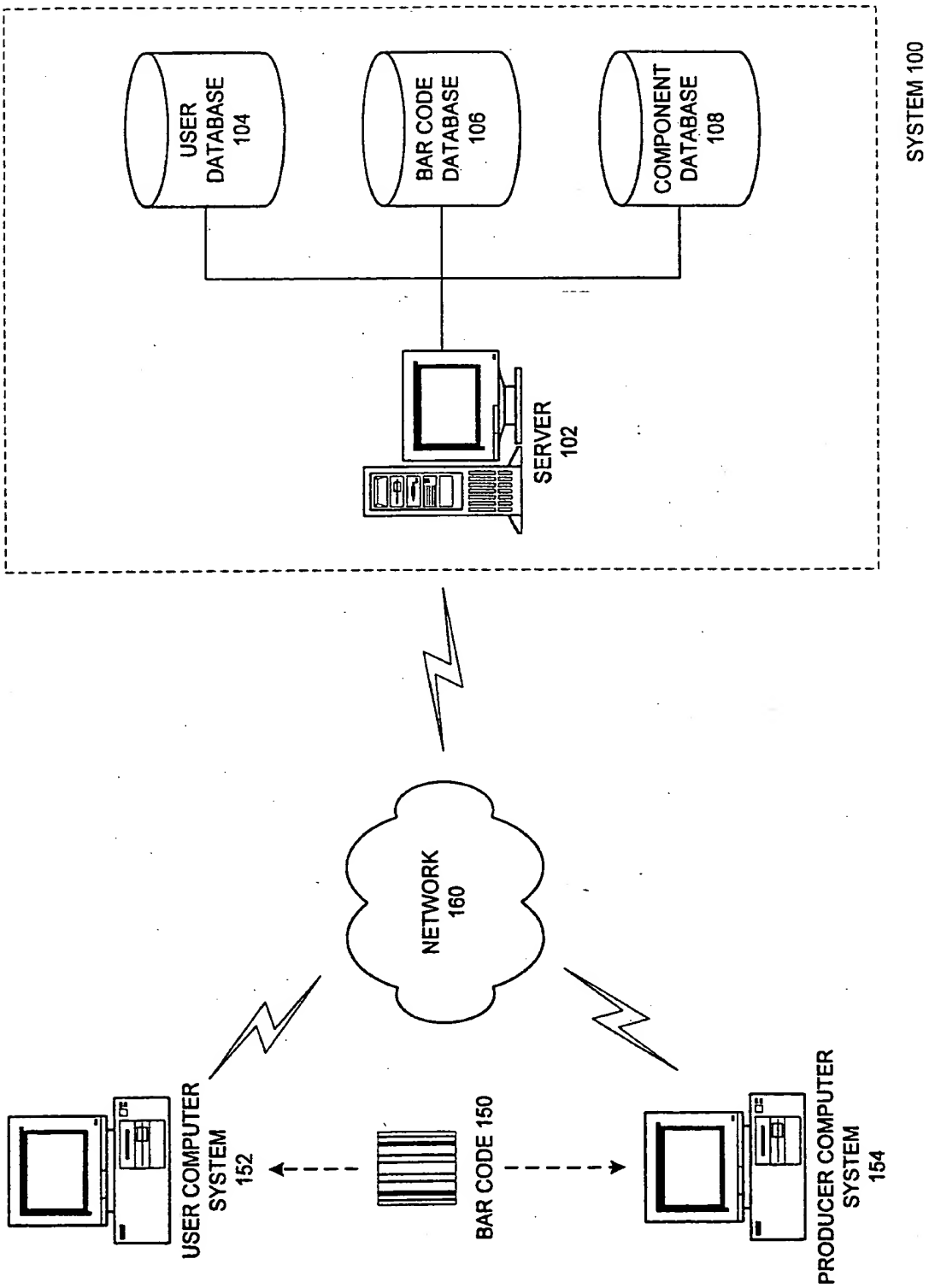
USER DATABASE 104
BAR CODE DATABASE 106
COMPONENT DATABASE 108
SYSTEM 100
SERVER 102
NETWORK 160
USER COMPUTER SYSTEM 152
BAR CODE 150
PRODUCER COMPUTER SYSTEM 154

FIG. 1

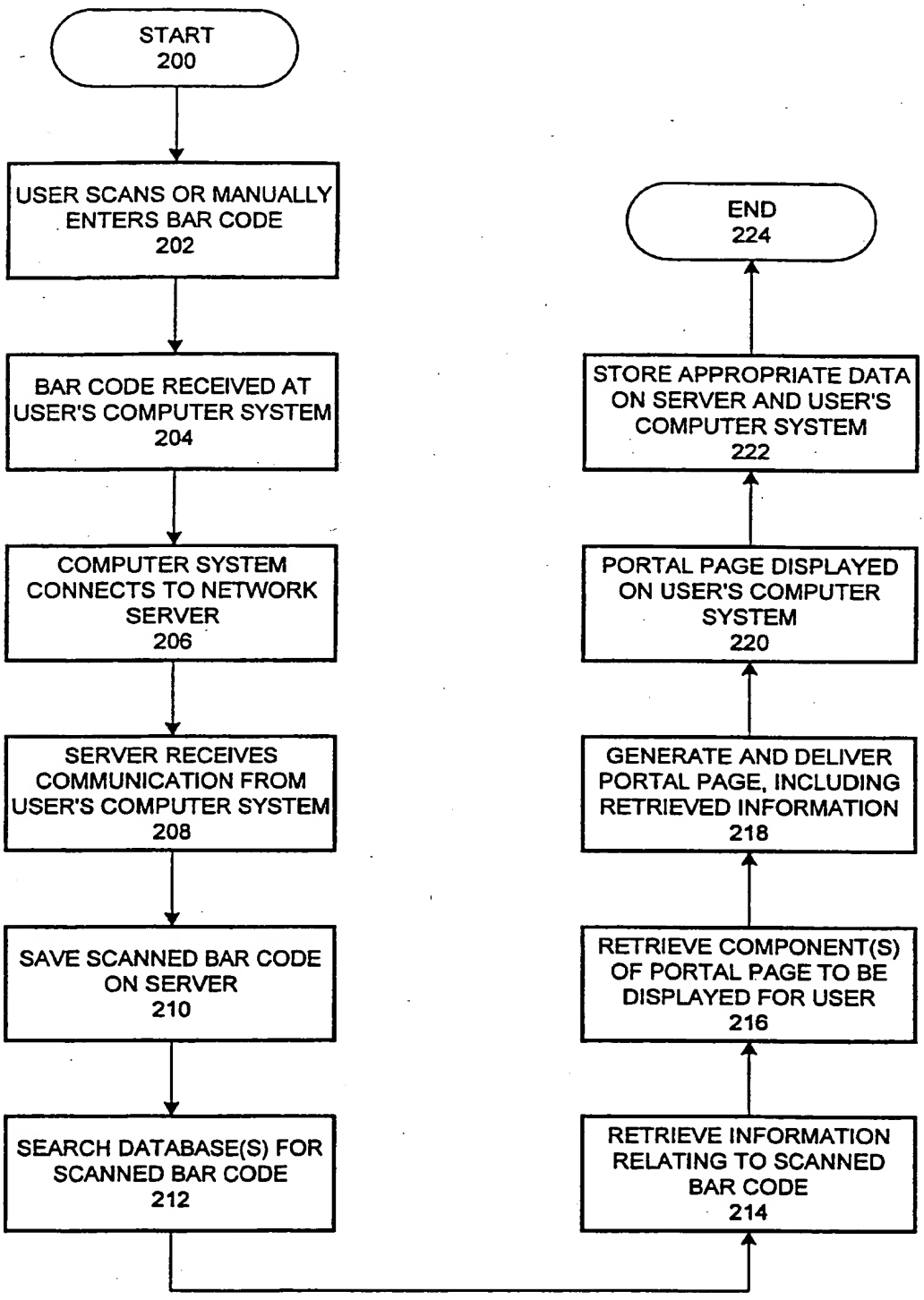
START
200
USER SCANS OR MANUALLY ENTERS BAR CODE
202
BAR CODE RECEIVED AT USER'S COMPUTER SYSTEM
204
COMPUTER SYSTEM CONNECTS TO NETWORK SERVER
206
SERVER RECEIVES COMMUNICATION FROM USER'S COMPUTER SYSTEM
208
SAVE SCANNED BAR CODE ON SERVER
210
SEARCH DATABASE(S) FOR SCANNED BAR CODE
212
RETRIEVE INFORMATION RELATING TO SCANNED BAR CODE
214
RETRIEVE COMPONENT(S) OF PORTAL PAGE TO BE DISPLAYED FOR USER
216
GENERATE AND DELIVER PORTAL PAGE, INCLUDING RETRIEVED INFORMATION
218
PORTAL PAGE DISPLAYED ON USER'S COMPUTER SYSTEM
220
STORE APPROPRIATE DATA ON SERVER AND USER'S COMPUTER SYSTEM
222
END
224

FIG. 2

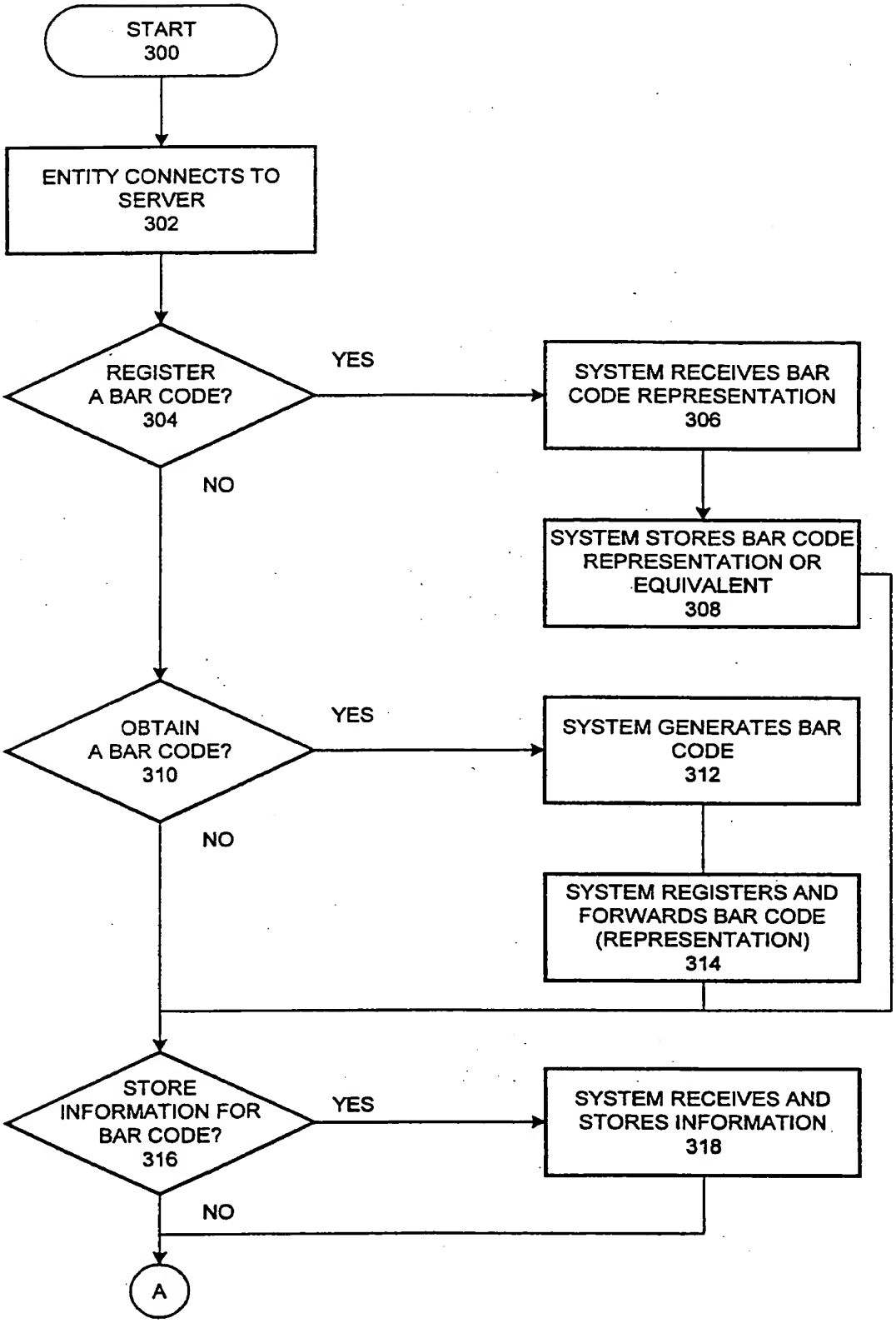
START
300
ENTITY CONNECTS TO SERVER
302
REGISTER A BAR CODE?
304
YES
SYSTEM RECEIVES BAR CODE REPRESENTATION
306
NO
SYSTEM STORES BAR CODE REPRESENTATION OR EQUIVALENT
308
OBTAIN A BAR CODE?
310
YES
SYSTEM GENERATES BAR CODE
312
NO
SYSTEM REGISTERS AND FORWARDS BAR CODE (REPRESENTATION)
314
STORE INFORMATION FOR BAR CODE?
316
YES
SYSTEM RECEIVES AND STORES INFORMATION
318
NO
A

FIG. 3A

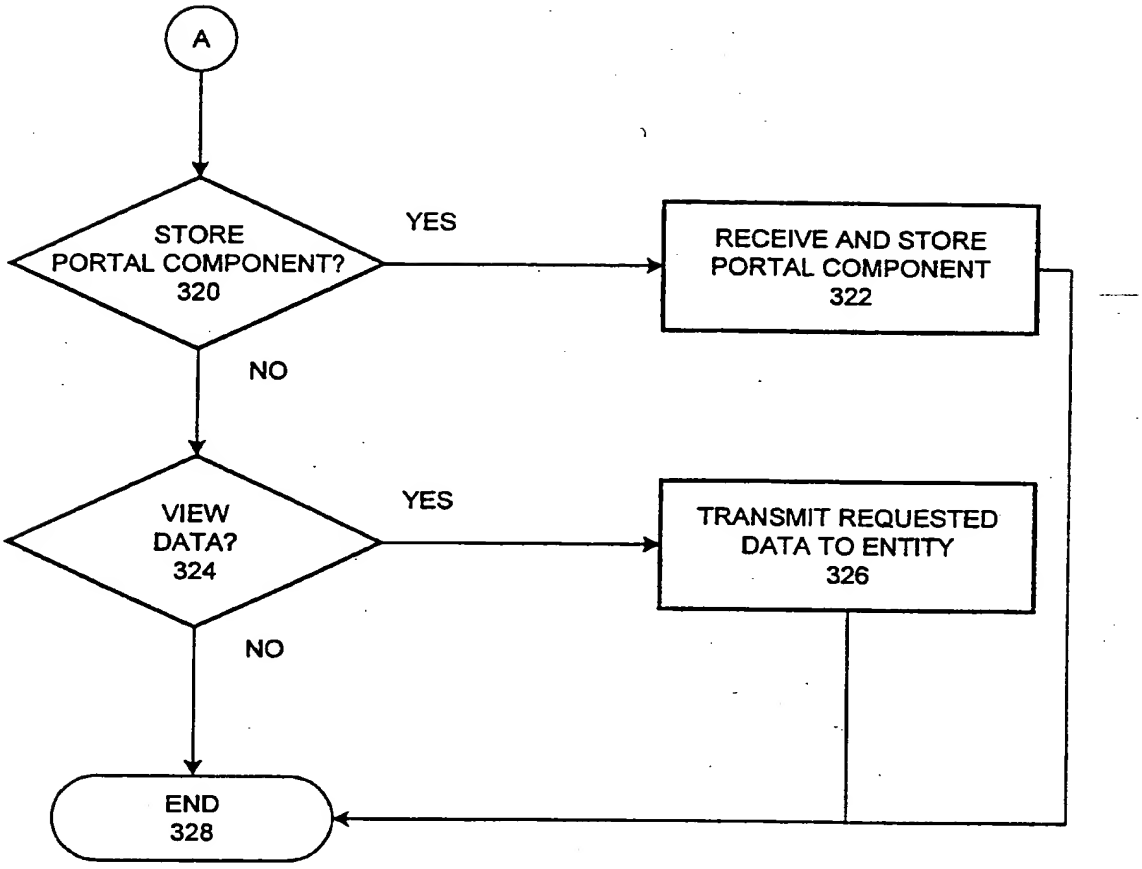
A
STORE PORTAL COMPONENT? 320
YES
RECEIVE AND STORE PORTAL COMPONENT 322
NO
VIEW DATA? 324
YES
TRANSMIT REQUESTED DATA TO ENTITY 326
NO
END 328

FIG. 3B